

have been noticed, but which were beyond the limits of a paper of this description. It is sufficient that the system harmonises in all its parts, and from whatever point of view, it presents simplicity as its beauty, and commends itself to our notice by its beautiful adaptation to our wants. I would call particular attention to the general truths laid down in this paper, for beyond them there is but little difficulty.

Every portion of the system is so reduced to certain and easily understood principles, that the perception of one part necessarily leads to the attainment of the rest. I shall be happy to furnish any information I am able, and should any member wish to obtain works treating of phonetics, I shall be pleased to lend any I have in my possession.

XII.

ON THE TIMBER OF THE COLONY.

BY GEORGE HOLMES, ESQ.

READ MAY 3, 1855.

IN the greater portion of the habitable world timber is the most valuable part of the vegetable creation; the inexhaustible supply of wood in almost every country has been made use of by mankind from the earliest period of his existence.

It may be presumed it was first used as firewood; and in the erection of huts, implements of husbandry and warfare, as may be seen in clubs, bows, arrows, boomerangs, spears, &c., &c.

Growing trees are supposed by naturalists to have the same extent of surface occupied by roots as the branches above, but this is as yet not decided.

All proper wood possesses two sets of fibres, in which the growth of the plant is perfected.

The medullar or horizontal rays radiate from the centre or pith of the tree to the outer bark; most fibres are smaller and closer as they proceed externally. Consequently more dense, from the tubes being smaller than in the inner portion.

The vertical fibres and the medullary rays are intermingled in some timbers closely and uniformly; which together form collectively the substance of the wood, with the cells running amidst the fibres.

A portion of these vessels or cells are employed in carrying food from the roots to the leaves or mouths of the plants; when digested the fluid returns through the outer cells, near the bark, and combines with the matter in the external layers of the wood, and mostly becomes consolidated, and forms the new ring, in addition to a portion of the bark; annually, the remainder returns to the earth as excretion. The last or colouring process, is supposed to be the decomposition of gum, or resinous fluid, throughout the medullary rays, towards the centre, where it leaves its contents, forming the first ring.

The multiplicity of fibres constitute the chief difference between hard and soft wood, as also its specific gravity.

Flexibility in various woods, caused by the distances between the vertical and horizontal fibres—if long, vertically, the wood is tough; if short, the result is the reverse—the beech is an example of the latter sort.

The most elastic woods are those whose fibres are less

intermixed with horizontal rays, and free from knots, such as lancewood, hickory, ash, &c., &c.

Cross-grained timbers have the rays irregular and sometimes diagonally, such as the elm, maple, lignumvitæ, &c.

By the preceding data one is enabled to form a pretty correct idea of the value of wood, and the purposes for which each variety is best adapted.

The woods of this colony, generally belong to the harder and tougher sorts, with some exceptions.

A few of the trees most familiar to us.—The

Blue Gum . (*Eucalyptus Robusta*).

Stringy Bark („ *Faborum*.)

Flooded Gum („ *Goniscalyx*).

Red Gum (*Cantho-carpies*)

and boxwood are used for many purposes where strength, durability, and size are necessary. Red and blue gum wood are much used in ship building, and generally in public works, such as railways, bridges, piles, by coach builders and manufacturers of agricultural implements.

The stringy bark is not so valuable a timber for these works, being lighter and more liable to warp and split; still its immense size and straight grain renders it very useful where long piles are necessary, as also for trenails and a variety of other purposes.

The above timbers are a good substitute for the oak, elm, ash, and hickory of the old world.

I am not aware of any experiments as to the relative strengths of timber grown in Australia, except in one instance where iron bark is tested with English oak. The proportion is 1000: 1557, which gives a result of fifty per cent. to the iron bark, and makes it so much prized for spokes and felloes by coach builders and carpenters.

Some of these timbers are imported to Europe, but the purposes to which they are applied seems strange; for in-

stance, in making ramrods and handles for surgical instruments and artizans' tools.

These woods are valuable now, and will be still more so when the "iron horse" snorts through the primeval forest.

There is one important characteristic connected with most of the hard wood grown here, and in other countries where the hot winds rush over.

These timbers when placed in works are much more liable to contraction longitudinally than European wood, therefore it behoves engineers, architects, and builders, to make calculations accordingly. I have myself seen one-half an inch contraction in a piece of timber eight inches square by ten feet long.

Cedar (*Cedrales Australis*) is too well known to require description. Almost every block of houses in Melbourne can show to what purposes it is applied, both in the shape of furniture and in-door fittings, &c., &c.

Most of the above woods are in Europe called Botany Bay beef wood by the mechanics and men who use them.

Other colonial woods are very important, where their use becomes known to us. These woods are not of such immense growth nor so numerous as the before-mentioned.

Black Wood, (*Accasia Melunoxylon*.)

Botany Bay rosewood is a very valuable and beautiful wood; used in the manufacture of the finest furniture fittings, decorations, &c.

He Oak, (*Casurina quadrivalvis*.)

She Oak, (" *equaefolia*), and others.

Woods of smaller dimensions, equally beautiful, being capable of receiving a fine polish, or formed in the hands of an artist to the beautiful forms by which wealth and luxury are surrounded; while at present a few specimens may be occasionally seen in the hands of a turner, and now and then in a small piece of cabinet-work.

There are other woods valuable, not yet brought into

much notice, such as the honeysuckle, (*Banksia Australis*), and woods of the same class, which require an investigation above what is here intended. But it may be seen by reference to the Sydney Exhibition Catalogue. It is shown there are 245 varieties of native woods, collected from the southern districts. Of these—

- 22 produce excellent hard wood
- 12 “ wood suitable for turning.
- 16 “ wood of considerable variety for cabinet-making.

XIII.

MICROSCOPIC INVESTIGATION, AND SOME MINOR DETAILS OF MANIPULATION.

BY WILLIAM SYDNEY GIBBONS.

READ MAY 3, 1855.

IMPORTANT and interesting as doubtless all will admit the study of micrography to be, some apology may appear necessary for the selection of a subject so limited in its interest as that I have chosen for the present paper. The details I have to communicate are so apparently trivial, that few, but those who are engaged in the prosecution of microscopic investigation, will be likely to enter into them with me. They are merely points of manipulation—the results of my own expe-